

Claims

1-12 (Cancelled).

13. (New) In a method including the step of passing an electric current through an electrolyte from an inert anode to a cathode in an electro chemical cell the improvement comprising :

said electrolyte being an acidic electrolyte consisting essentially of D₂O and an acid serving as a source of hydrogen ions,

said cathode is of an electrode formed of a metal capable of taking up hydrogen ions into the physical structure of the metal, this metal being selected from the group consisting of palladium and titanium,

the temperature of the electrolyte which is between said electrodes, the acidity of the electrolyte, and the voltage and density of said current being related so that this temperature, this acidity, this voltage and density are all concurrently effective so that as said method is practiced a greater amount of heat is produced in said cell than would be produced in said cell if the D₂O in said electrolyte was replaced by the same quantity of "regular" water.

14. (New) The method set forth in claim 13 including:

the step of collecting gases given off by reactions involving the electrolyte during the practice of said method is carried out in an enclosed space above this electrolyte; reacting the collected gases; and

returning the reaction products of the collected gases to said electrolyte.

15. (New) The method set forth in claim 14 wherein:

the collected gases are catalytically reacted above the electrolyte in said cell and are returned to said electrolyte by the action of gravity.

16. (New) The method set forth in claim 15 wherein said acid is sulfuric acid.

17. (New) The method claimed in claim 16 wherein; said electrolyte contains 15% by volume sulfuric acid having a specific gravity of 1.84.

18. (New) The method claimed in claim 13 wherein: said metal is palladium.

19. (New) The method claims in claim 13 wherein: said metal is titanium.

20. (New) The method set forth in claim 13 wherein
the step of collecting gases given off by reactions involving the electrolyte during the practice of said method is carried out in an enclosed space above this electrolyte;
reacting the collected gases; and
returning the reaction products of the collected gases to said electrolyte.
the collected gases are catalytically reacted above the electrolyte in said cell and are returned to said electrolyte by the action of gravity.
said acid is sulfuric acid.
said electrolyte contains 15% by volume sulfuric acid having a specific gravity of 1.84.

21. (New) A method of operating an electrochemical cell including an anode during the operation of the cell and a cathode electrically connected through an electrolyte in which: said electrolyte consists essentially of a mixture of D₂O and an effective amount of an acid to serve as a source of hydrogen ions,
said cathode being formed of a metal which is capable of taking up these hydrogen ions into the physical structure of the metal during the operation of the cell which is selected from the group consisting of palladium and titanium,

the temperature and acidity of the electrolyte between the electrodes and the density and current between the electrodes being related so that said electrolyte is both heated and caused to become radioactive during the operation of said cell.